

CLAIM AMENDMENTS

1. (Currently Amended) An electrochemical etching system, comprising:
a container for an etching bath and for holding an n-type silicon substrate so that a first surface of said silicon substrate contacts hydrofluoric acid in the etching bath;
an electrode positioned in the hydrofluoric acid;
a power source having a positive terminal connected to the silicon substrate and a negative terminal connected to the electrode; and
an illumination unit having a light source for illumination of a second surface of the silicon substrate with an illumination intensity of at least 10mW/cm^2 and including a illumination controller for controlling the illumination of the second surface of the silicon substrate.
2. (Previously Presented) The electrochemical etching system in accordance with claim 1, wherein a ratio of a maximum illumination to a minimum illumination of the second surface of the silicon substrate is no more than 1.69:1.
3. (Previously Presented) The electrochemical etching system in accordance with claim 1, further comprising:
a reference electrode positioned in the hydrofluoric acid; and
a voltage meter electrically connected between said reference electrode and the silicon substrate.
4. (Cancelled)
5. (Currently Amended) The electrochemical etching system in accordance with claim ~~4~~1, wherein said illumination controller controls quantity of light emitted from said light source.
6. (Currently Amended) The electrochemical etching system in accordance with claim ~~4~~1, wherein said illumination controller ~~has~~ includes a modulator, said modulator being connected between said light source and the silicon substrate for modulating the light emitted from said light source.

7. (Currently Amended) The electrochemical etching system in accordance with claim 41, further comprising:

a current detector for detecting an electric current supplied from said power source to the silicon substrate; and

an electric circuit for controlling quantity of the light emitted from said light source based upon the electric current detected by said current detector.

8. (Previously Presented) The electrochemical etching system in accordance with claim 1, further comprising a unit for retaining a stable quality of the hydrofluoric acid.

9. (Currently Amended) ~~The~~ An electrochemical etching system in accordance with claim 1, further comprising:

a container for an etching bath and for holding an n-type silicon substrate so that a first surface of said silicon substrate contacts hydrofluoric acid in the etching bath;

an electrode positioned in the hydrofluoric acid;

a power source having a positive terminal connected to the silicon substrate and a negative terminal connected to the electrode;

an illumination unit having a light source for illumination of a second surface of the silicon substrate with an illumination intensity of at least 10mW/cm²; and

a metal plate positioned on the second surface of the silicon substrate, said metal plate having a plurality of openings arranged uniformly for transmitting the light emitted from said illumination unit toward the second surface of the silicon substrate.

10. (Previously Presented) The electrochemical etching system in accordance with claim 9, wherein said metal plate is electrically conductive and mounted on the second surface of the silicon substrate.

11. (Previously Presented) The electrochemical etching system in accordance with claim 10, wherein said metal plate is integrally formed on the second surface of the substrate.

12. (Previously Presented) The electrochemical etching system in accordance with claim 10, wherein said metal plate is independently formed on the second surface of the substrate.

13. (Previously Presented) The electrochemical etching system in accordance with claim 9, wherein a part of said metal plate remaining between neighboring openings has a width larger than a thickness of the silicon substrate.

14. (Currently Amended) An electrochemical etching method comprising:
placing a first surface of an n-type silicon substrate in contact with an electrolyte,
arranging a metal plate on a second surface of the silicon substrate, the metal plate having a plurality of openings arranged uniformly,

illuminating ~~a~~ the second surface of the silicon substrate through the openings with an illumination intensity of at least 10mW/cm^2 , and

controlling an etching current with the illumination of the second surface to form a pore or trench in the first surface of the silicon substrate.

15 (Cancelled)

16. (Previously Presented) The electrochemical etching method in accordance with claim 14, wherein a ratio of a maximum illumination to a minimum illumination of the second surface of the silicon substrate is no more than 1.69:1.

17. (Previously Presented) An electrochemical etching method comprising:
placing a first surface of an n-type silicon substrate in contact with an electrolyte;
illuminating a second surface of the silicon substrate with a first illumination intensity of at least 10mW/cm^2 , controlling an etching current with the illumination of the second surface to form pores or trenches in the first surface of the silicon substrate extending toward the second surface of the silicon substrate; and

thereafter illuminating the second surface of the silicon substrate with a second illumination intensity, higher than the first illumination intensity, to extend the pores or trenches laterally to connect the pores or trenches to each other.

18. (Previously Presented) A product manufactured by the electrochemical etching method in accordance with claim 14.